



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Paul Turner, John P. Guiver, Brian Lines, S. Steven Treiber

Application No.: Not Assigned Yet      Group Art Unit: Not Assigned Yet

Filed: June 27, 2001      Examiner: Not Assigned Yet

Title: COMPUTER METHOD AND APPARATUS FOR CONSTRAINING A NON-LINEAR  
APPROXIMATOR OF AN EMPIRICAL PROCESS

Date: <u>6/27/01</u>
EXPRESS MAIL LABEL NO. <u>EL 552284690 US</u>

INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents

Washington, D.C. 20231

Sir:

This Information Disclosure Statement is submitted:

- ☐ under 37 CFR 1.129(a), or  
(First/Second submission after Final Rejection)
- ☒ under 37 CFR 1.97(b), or  
(Within any one of the following time periods: three months of filing national application (other than a CPA) or date of entry of the national stage in an international application; or before the mailing date of a first office action on the merits in a non-provisional application, including a CPA, or a Request for Continued Examination).
- ☐ under 37 CFR 1.97(c) together with either:
- ☐ a Statement under 37 CFR 1.97(e), as checked below, or
- ☐ a \$180.00 fee under 37 CFR 1.17(p), or  
(After the 37 CFR 1.97(b) time period, but before final action or notice of allowance, whichever occurs first)
- ☐ under 37 CFR 1.97(d) together with:
- ☐ a Statement under 37 CFR 1.97(e), as checked below, and
- ☐ a \$180.00 fee under 37 CFR 1.17(p), or  
(Filed after final action or notice of allowance, whichever occurs first, but on or before payment of the issue fee)
- ☐ under 37 CFR 1.97(i):  
Applicant requests that the IDS and cited reference(s) be placed in the application filewrapper.  
(Filed after payment of issue fee)

Statement Under 37 CFR 1.97(e)

- ☐ Each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement; or
- ☐ No item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned, after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

Statement Under 37 CFR 1.704(d) (Patent Term Adjustment)

Applies to original applications (other than design) filed on or after May 29, 2000

- ☐ Each item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the Information Disclosure Statement.
- ☒ Enclosed herewith is form PTO-1449:
- ☒ Copies of the cited references are enclosed.
- ☐ Copies of cited references are enclosed except those entered in prior application, U.S. Application No. [ ], to which priority under 35 U.S.C. 120 is claimed. [The earlier application contains copies of the cited references.]
- ☐ The listed references were cited in the enclosed International Search Report in a counterpart foreign application.
- ☐ The "concise explanation" requirement (non-English references) for reference(s) [ ] under 37 CFR 1.98(a)(3) is satisfied by:
- ☐ the explanation provided on the attached sheet.
  - ☐ the explanation provided in the Specification.
  - ☐ submission of the enclosed International Search Report.
  - ☐ the enclosed English language abstract.

☐ Applicant requests that the following pending applications be considered:

Examiner's  
Initials

\_\_\_\_ U.S. Patent Application No. [ ], Publication No. [ ], Publication Date [ ],  
by [inventor(s)], filed [ ], Docket No.: [ ]

\_\_\_\_ U.S. Patent Application No. [ ], Publication No. [ ], Publication Date [ ],  
by [inventor(s)], filed [ ], Docket No.: [ ]

\_\_\_\_ U.S. Patent Application No. [ ], Publication No. [ ], Publication Date [ ],  
by [inventor(s)], filed [ ], Docket No.: [ ]

\_\_\_\_\_  
Examiner

\_\_\_\_\_  
Date

☐ A copy of each above-cited application, including the current claims, is enclosed.

☐ A copy of each above-cited application, including the current claims, is enclosed, except those entered in prior application, U.S. Application No. [ ], to which priority under 35 U.S.C. 120 is claimed.

The Examiner is requested to return a copy of the above list of pending applications indicating which references were considered with the next office communication.

It is requested that the information disclosed herein be made of record in this application.

Method of payment:

☐ A check for the fee noted above is enclosed, or the fee has been included in the check with the accompanying Reply. A copy of this Statement is enclosed.

☐ Please charge Deposit Account 08-0380 in the amount of \$[ ]. A copy of this Statement is enclosed.

☒ Please charge any deficiency in fees and credit any overpayment to Deposit Account 08-0380.

Respectfully submitted,

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Dated: June 27, 2001

PTO-1449 REPRODUCED  <b>INFORMATION DISCLOSURE CITATION IN AN APPLICATION</b>  <b>June 27, 2001</b>  (Use several sheets if necessary)				ATTORNEY DOCKET NO. 1086.2002-001		APPLICATION NO. Not Assigned Yet	
				APPLICANT Paul Turner et al.			
				FILING DATE June 27, 2001		GROUP Not Assigned Yet	
<b>U.S. PATENT DOCUMENTS</b>							
EXAM- INER INI- TIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE IF APPROPRIATE
	AA	5,933,345	Aug. 3, 1999	Martin et al.	364	164	1000 U.S. PTO 09/892586 06/27/01
	AB	5,477,444	Dec. 19, 1995	Bhat et al.	364	152	
	AC						
	AD						
	AE						
	AF						
	AG						
	AH						
	AI						
	AJ						
	AK						
<b>FOREIGN PATENT DOCUMENTS</b>							
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES NO
	AL						
	AM						
	AN						
	AO						
	AP						
	AQ						
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>							
	AR	Piche, S.W., "The Second Derivative of a Recurrent Network." Conference Proceedings IEEE Conference on Neural Networks, IEEE, 0-7803-1901-X94: 245-250 (1994).					
	AS	Bishop, C., "Exact Calculation of the Hessian Matrix for the Multilayer Perception," <i>Neural Computation</i> , 4: 494-501 (1992).					
	AT	Werbos, P.J., "Forms of Backpropagation for Sensitivity Analysis, Optimization, and Neural Networks." In <i>The Roots of Backpropagation</i> , John Wiley & Sons, Inc. eds. (NY: John Wiley & Sons, Inc.) pp.256-294, (1994).					
EXAMINER				DATE CONSIDERED			

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<b>FOREIGN PATENT DOCUMENTS</b>							
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES      NO
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>							
	AU	Hartman, E., "Training Feedforward Neural Networks with Gain Constraints," <i>Neural Computation</i> , 12: 811-829 (2000).					
	AV	Huafang, N., Hunkeler, D., "Prediction of copolymer composition drift using artificial neural networks: copolymerization of acrylamide with quaternary ammonium cationic monomers," <i>Polymer</i> , vol. 38, no. 3, pp. 667-675 (February 1997).					
	AW	Kulawski, G.J., Brdys, M.A., "Stable adaptive control with recurrent networks," <i>Automatica</i> , vol. 36, pp. 5-22 (2000).					
	AX	Lindskog, P., Ljung, L., "Ensuring monotonic gain characteristics in estimated modes by fuzzy model structures," <i>Automatica</i> , vol. 36, pp. 311-317 (2000).					
	AY	Molga, E.J., van Woezik, B.A.A., Westerterp, K.R., "Neural networks for modeling of chemical reaction systems with complex kinetics: oxidation of 2-octanol with nitric acid," <i>Chemical Engineering and Processing</i> , vol. 39, no. 4, pp. 323-334 (July 2000).					
	AZ	Neuroth, M., MacConnell, P., Stronach, F., Vamplew, P., "Improved modeling and control of oil and gas transport facility operations using artificial intelligence," <i>Knowledge Based Systems</i> , vol. 13, no. 2, pp. 81-92, (April 2000).					
	AR2	Yaser, S., Abu-Mostafa, "Machines that learn from hints," <i>Scientific American</i> , pp. 64-69, (April 1995).					
	AS2	Zhang, J., Morris, A.J., Martin, E.B., Kiparissides, C., "Estimation of impurity and fouling in batch polymerisation reactors through application of neural networks," <i>Computers in Chemical Engineering</i> , vol. 23, no. 3, pp. 301-314, (February 1999).					
EXAMINER				DATE CONSIDERED			